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AREN'T FOX LLP			EXAMINER	
1050 CONNECTICUT AVENUE, N.W.			COLEMAN, KEITH A	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/589,500	Applicant(s) MATSUO ET AL.
	Examiner KEITH A. COLEMAN	Art Unit 4175

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-11 is/are pending in the application.
 - 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-11 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 August 2006 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement (PTO-1448)
Paper No(s)/Mail Date 6/5/2007, 9/13/2006, 8/15/2006
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) Notice of Informal Patent Application
- 6) Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace et al. (US Patent No. 1,640,742) in view of Heathcote (US Patent No.

4,833,352) and Kazutomo et al. (Japanese Publication 2003-137609, Provided by Applicant).

With regards to claim 1, the patent to Wallace et al. discloses an electromagnetic fuel injection valve (i.e. piston 21, Col. 1, Line 57, See Figure 1), comprising: a valve operating part (21) in which a valve body (21) spring-biased (via spring 34, Col. 1, Lines 78) in a direction to be seated in a valve seat (i.e. Seat member 45 and 30, See Col. 2, Lines 5-10) is accommodated in a valve housing (81, Col. 3, Line 17) having the valve seat (i.e. Seat member 45 and 30) at a front end thereof; a solenoid part (26) in which a coil assembly (26, Col. 1, Lines 63-64) capable of exhibiting electromagnetic force for driving the valve body (21) to a side to separate from the valve seat (i.e. Seat member 45 and 30, See Figure 1) is accommodated in a solenoid housing (i.e. casing 28, Col. 1, Line 62) provided to connect to the valve housing (81).

Wallace et al. does not disclose a resin molded part of a synthetic resin which integrally has a power receiving coupler to which a power receiving side connecting terminal connecting to a coil of the coil assembly is faced, at least part of the solenoid housing being embedded in the resin molded part, characterized in that the resin molded part comprises a first resin molded layer which is formed of a synthetic resin with mixture of glass fibers to cover at least part of the solenoid housing and format least part of the coupler, and a second resin molded layer which is formed of thermoplastic polyester elastomer with mixture of glass fibers excluded to cover the first

resin molded layer. However, Wallace et al. explicitly states that cylinder 20 can be made of any suitable non-magnetic material (See Col. 1, Lines 40-43).

The patent to Heathcote discloses a resin molded part (40, See Col. 3, Lines 21-23) of a synthetic resin which integrally has a power receiving coupler (29, See Col. 2, Line 37 and Figure 1) to which a power receiving side connecting terminal (i.e. printed circuit board 19, Col. 2, Line 34, See Figure 1) connecting to a coil (via external interrogation circuit, See Col. 2, Lines 38-41) of the coil assembly (10, Col. 1, Line 59) is faced, at least part of the solenoid housing (part 17 of cylindrical former 15, See Col. 1, Lines 60-65) being embedded in the resin molded part (40, See Col. 1, Lines 59-62, See Figure 1). The patent to Heathcote does not positively disclose that the resin molded part comprises a first resin molded layer which is formed of a synthetic resin with mixture of glass fibers to cover at least part of the solenoid housing and formed least part of the coupler, and a second resin molded layer which is formed of thermoplastic polyester elastomer with mixture of glass fibers excluded to cover the first resin molded layer.

Since Heathcote explicitly states on Col. 1, Lines 51-54 that "In the example the component 12 is a piston forming part of a fuel injection pumping apparatus for supplying fuel to an internal combustion engine.", it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the housing materials of Wallace et al. with synthetic resin in view of the teaching to Heathcote, in order to secure casing parts and use non magnetic materials (See Col. 1, Lines 35-40 and 5-10).

As to the resin layers containing glass fibers, Kazumoto et al. discloses a thermoplastic resin containing glass fibers. Since Heathcote explicitly states using multiple resin and molded materials (i.e. one synthetic (part 15) and one epoxy (40), See Col. 1, Line 60 and Col. 3, Line 22 and using molded casings (31 and 39, See Col. 1, Lines 43-45 and Lines 1-3)) and epoxies are commonly found with fibers, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the resin layers of the Heathcote with wherein the first resin molded layer which is formed of a synthetic resin (i.e. epoxy) with mixture of glass fibers to cover at least part of the solenoid housing and formed least part of the coupler, and a second resin molded layer which is formed of thermoplastic polyester elastomer (i.e. molded casings or non magnetic material) with mixture of glass fibers excluded to cover the first resin molded layer in view of Kazutomo et al. because the modification is invariably a change in equivalent material. See MPEP 2144.07. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious).

With regards to claims 2, the combination of Wallace et al. and Heathcote discloses all the limitations of the claimed subject except positively disclosing wherein the first resin molded layer is formed of liquid crystal polymer with mixture of glass fibers.

As to the resin layers containing glass fibers, Kazumoto et al. discloses a thermoplastic resin containing glass fibers. Since Heathcote explicitly states using multiple resin and molded materials (i.e. one synthetic (part 15) and one epoxy (40),

See Col. 1, Line 60 and Col. 3, Line 22 and using molded casings (31 and 39, See Col. 1, Lines 43-45 and Lines 1-3)) and epoxies are commonly found with glass fibers, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the resin layers of the Heathcote with wherein the first resin molded layer is formed of liquid crystal polymer with mixture of glass fibers in view of the teaching to Kazumoto et al. because the modification is invariably a change in equivalent material. See MPEP 2144.07. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious).

5. Claims 3, 4, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace et al. (US Patent No. 1,640,742) in view of Heathcote (US Patent No. 4,833,352).

With regards to claim 3, the patent to Wallace et al. discloses a valve operating part (i.e. piston 21, Col. 1, Line 57, See Figure 1) in which a valve body (21) spring-biased (via spring 34, Col. 1, Lines 76-77) in a direction to be seated in a valve seat (i.e. seat member 45 and 30, See Col. 2, Lines 5-10) is accommodated in a valve housing (81) having the valve seat (i.e. seat member 45 and 30) at a front end thereof; a solenoid part (26) in which a coil assembly (26, Col. 1, Line 56) capable of exhibiting electromagnetic force for driving the valve body (21) to a side to separate from the valve seat (i.e. seat member 45 and 30, See Col. 1, Lines 90-95, See Figures 1 and 2) is

accommodated in a solenoid housing (i.e. casing 28, Col. 1, Line 62) provided to connect to the valve housing (81).

Wallace et al. does not disclose a resin molded part of a synthetic resin which integrally has a power receiving coupler to which a power receiving side connecting terminal connecting to a coil of the coil assembly is faced, at least part of the solenoid housing being embedded in the resin molded part, characterized in that the resin molded part is formed by two-layer molding of a first resin molded layer which covers at least part of the solenoid housing and forms a coupler main part forming a skeletal structure of the power receiving coupler, and a second resin molded layer which is formed of a material with smaller bending strength than the first resin molded layer and covers the first resin molded layer so that the first resin molded layer is exposed at a tip end side from an intermediate portion of the power receiving coupler, and at least one engaging groove endlessly continuing in which the second resin molded layer is engaged is formed at the first resin molded layer at the intermediate portion of the power receiving coupler.

Heathcote discloses a resin molded part (40, See Col. 3, Lines 20-25) of a synthetic resin which integrally has a power receiving coupler (29, See Col. 2, Line 37) to which a power receiving side connecting terminal (19) connecting to a coil (inside stator assembly 10, See Col. 1, Line 57) of the coil assembly (10) is faced, at least part of the solenoid housing (15, Col. 1, Line 60) being embedded in the resin molded part (40), characterized in that the resin molded part (40) is formed by two-layer molding of a first resin molded layer (40) which covers at least part of the solenoid housing (15, See

Figure 1) and forms a coupler main part (interface between 29 and 40, See Figure 1) forming a skeletal structure of the power receiving coupler (29), and a second molded layer (i.e. casing 39) covering the first resin molded layer (40) so that the first resin molded layer (40) is exposed at a tip end side from an intermediate portion of the power receiving coupler (29), and at least one engaging groove (groove formed by the contouring of the cooling epoxy on connector 19 and 29, See Col. 3, Lines 30-36 and Figure 1) endlessly continuing in which the second molded layer (39) is engaged is formed at the first resin molded layer (40) at the intermediate portion of the power receiving coupler (29).

Since Heathcote explicitly states on Col. 1, Lines 51-54 that "In the example the component 12 is a piston forming part of a fuel injection pumping apparatus for supplying fuel to an internal combustion engine." and Wallace et al. explicitly states that cylinder 20 can be made of any suitable non-magnetic material (See Col. 1, Lines 40-43), it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the housing materials of Wallace et al. with synthetic resin in view of the teaching to Heathcote, in order to secure casing parts and use non magnetic materials (See Col. 1, Lines 35-40 and 5-10).

As to the second molded layer being a resin, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute the second molded layer of the Heathcote with a resin wherein the second resin molded layer is formed of a material with smaller bending strength than the first resin molded layer because the modification is invariably a change in equivalent material. See MPEP

2144.07. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious).

With regards to claim 4, the combination of Wallace et al. and Heathcote discloses all the limitations of the claimed subject including Heathcote disclosure of wherein a projected portion (cone shape 29 is projected from 19, See Figure 1) which elastically contacts a power supplying coupler (i.e. cable 30) attachably and detachably connected to the power receiving coupler (29) is formed at the second molded layer (39) at the portion forming part of the first power receiving coupler (29), and an engaging projection (the receiving portion or hole in 19) which detachably engages with the power supplying coupler (30) is formed at the first resin molded layer (40) at the portion forming part of the power receiving coupler (29) to sandwich the engaging groove (the receiving portion or hole in 19) between the engaging projection (the receiving portion or hole in 19) and the projected portion (cone shape 29). As to the second molded layer being a resin, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute the second molded layer of the Heathcote with a resin because the modification is invariably a change in equivalent material. See MPEP 2144.07. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious).

With regards to claim 7, the patent to Wallace et al. discloses a valve operating part (i.e. piston 21, Col. 1, Line 57, See Figure 1) in which a valve body (21) spring-biased (via spring 34, Col. 1, Lines 76-77) in a direction to be seated in a valve seat (i.e. seat member 45 and 30) is accommodated in a valve housing (81) having the valve seat (i.e. seat member 45 and 30) at a front end thereof; a solenoid part (26) in which a coil assembly (26, Col. 1, Line 56) capable of exhibiting electromagnetic force for driving the valve body (21) to a side to separate from the valve seat (i.e. seat member 45 and 30, See Col. 1, Lines 90-95, See Figures 1 and 2) is accommodated in a solenoid housing (i.e. casing 28, Col. 1, Line 62) provided to connect to the valve housing (81).

Wallace et al. does not disclose a resin molded part of a synthetic resin which integrally has a power receiving coupler to which a power receiving side connecting terminal connecting to a coil of the coil assembly is faced, at least part of the solenoid housing being embedded in the resin molded part, characterized in that the resin molded part is formed by two-layer molding of a first resin molded layer which covers at least part of the solenoid housing and forms a coupler main part forming a skeletal structure of the power receiving coupler, and a second resin molded layer which is formed of a material with larger linear expansion coefficient than the first resin molded layer and covers the first resin molded layer.

Heathcote discloses a resin molded part (40, See Col. 3, Lines 20-25) of a synthetic resin which integrally has a power receiving coupler (29, See Col. 2, Line 37) to which a power receiving side connecting terminal (19) connecting to a coil (inside stator assembly 10, See Col. 1, Line 57) of the coil assembly (10) is faced, at least part

of the solenoid housing (15, Col. 1, Line 60) being embedded in the resin molded part (40), characterized in that the resin molded part (40) is formed by two-layer molding of a first resin molded layer (40) which covers at least part of the solenoid housing (15, See Figure 1) and an air layer (i.e. a clearance on the skirt portion 39A of 39, See Col. 3, Lines 31-36) is partially formed between the first (40) and the second molded layers (39).

Since Heathcote explicitly states on Col. 1, Lines 51-54 that "In the example the component 12 is a piston forming part of a fuel injection pumping apparatus for supplying fuel to an internal combustion engine." and Wallace et al. explicitly states that cylinder 20 can be made of any suitable non-magnetic material (See Col. 1, Lines 40-43), it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the housing materials of Wallace et al. with synthetic resin in view of the teaching to Heathcote, in order to secure casing parts and use non magnetic materials (See Col. 1, Lines 35-40 and 5-10).

As to the second molded layer being a resin, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute the second molded layer of the Heathcote with a resin wherein the second resin molded layer is formed of a material with larger linear expansion coefficient than the first resin molded layer and covers the first resin molded layer because the modification is invariably a change in equivalent material. See MPEP 2144.07. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious).

With regards to claim 8, the combination of Wallace et al. and Heathcote discloses all the limitations of the claimed subject matter including Heathcote disclosure of wherein the second molded layer (39) comprises a thick-walled portion (41) at the center part thereof, and a thin-walled portion (42) at a tail end side which connects to the thick-walled portion (41) as a thinner portion than the thick-walled portion (41), and the thin-walled portion (42) interlocks with the first resin molded layer (40) via concavo-convex engagement (39's wall portion appears to be in a concavo-convex engagement, See Figure 1). As to the second molded layer being a resin, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to substitute the second molded layer of the Heathcote with a resin because the modification is invariably a change in equivalent material. See MPEP 2144.07. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious).

Since Heathcote explicitly states on Col. 1, Lines 51-54 that "In the example the component 12 is a piston forming part of a fuel injection pumping apparatus for supplying fuel to an internal combustion engine." and Wallace et al. explicitly states that cylinder 20 can be made of any suitable non-magnetic material (See Col. 1, Lines 40-43), it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide the housing materials of Wallace et al. with resins wherein the second molded layer comprises a thick-walled portion at the center part

thereof, and a thin-walled portion at a tail end side which connects to the thick-walled portion as a thinner portion than the thick-walled portion, and the thin-walled portion interlocks with the first resin molded layer via concavo-convex engagement in view of the teaching to Heathcote, in order to secure casing parts and use non magnetic materials (See Col. 1, Lines 35-40 and 5-10).

With regards to claim 9, the combination of Wallace et al. and Heathcote discloses all the limitations of the claimed subject matter including Heathcote disclosure of wherein an outer surface of the first resin molded layer (40) is formed with the other parts (41, 42, 39, 19, and 29), in a vicinity of concavo-convex engagement portions with the thin-walled portions (41 and 42). As to roughing the surfaces, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to roughen the surface of the molded layers because the roughen surface would allow better adhesion.

6. Claims 5, 6, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace et al. (US Patent No. 1,640,742) in view of Heathcote (US Patent No. 4,833,352) as applied to claims above, and further in view of Kazutomo et al. (Japanese Publication 2003-137609, Provided by Applicant).

With regards to claims 5 and 10, the combination of Wallace et al. and Heathcote discloses all the limitations of the claimed subject except positively disclosing wherein the first resin molded layer is formed of liquid crystal polymer with mixture of glass fibers.

As to the resin layers containing glass fibers, Kazumoto et al. discloses a thermoplastic resin containing glass fibers. Since Heathcote explicitly states using multiple resin and molded materials (i.e. one synthetic (part 15) and one epoxy (40), See Col. 1, Line 60 and Col. 3, Line 22 and using molded casings (31 and 39, See Col. 1, Lines 43-45 and Lines 1-3)) and Wallace et al. explicitly states that cylinder 20 can be made of any suitable non-magnetic material (See Col. 1, Lines 40-43), it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the resin layers of the Heathcote with wherein the first resin molded layer is formed of liquid crystal polymer with mixture of glass fibers in view of the teaching to Kazumoto et al. because the modification is invariably a change in equivalent material. See MPEP 2144.07. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious).

With regards to claims 6 and 11, the combination of Wallace et al. and Heathcote discloses all the limitations of the claimed subject except positively disclosing wherein the second resin molded layer is formed of thermoplastic polyester elastomer with mixture of glass fibers excluded.

As to the resin layers containing glass fibers, Kazumoto et al. discloses a thermoplastic resin containing glass fibers. Since Heathcote explicitly states using multiple resin and molded materials (i.e. one synthetic and one epoxy (40), See Col. 1, Line 60 and Col. 3, Line 22 and using molded casings (31 and 39, See Col. 1, Lines 43-45 and Lines 1-3)) and Wallace et al. explicitly states that cylinder 20 can be made of any suitable non-magnetic material (See Col. 1, Lines 40-43), it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the resin layers of the Heathcote with wherein the second resin molded layer is formed of thermoplastic polyester elastomer with mixture of glass fibers excluded in view of the teaching to Kazumoto et al. because the modification is invariably a change in equivalent material. See MPEP 2144.07. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tani et al. (US Patent No. 5,449,120) shows the current state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH A. COLEMAN whose telephone number is (571)270-3516. The examiner can normally be reached on Monday through Friday between 5:30-3 Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrence Till can be reached on (571) 272-1280. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Terrence R Till/
Supervisory Patent Examiner, Art Unit 4175

KAC
/K. A. C./
Examiner, Art Unit 4175